



FORCEnet

JOINT SERVICE/NAVY-WIDE SYSTEMS

Architectures and Standards

FORCEnet is the core of *Sea Power 21* and naval transformation, and is the Navy and Marine Corps vehicle to make Net-Centric Operations/Warfare (NCO/W) an operational reality. FORCEnet is the operational construct and architectural framework that makes Sea Strike, Sea Shield, and Sea Basing possible by integrating weapons, sensors, command & control, platforms, and warriors into a secure, networked, distributed combat force as part of the Global Information Grid (GIG). FORCEnet is not an acquisition program; it is an enterprise alignment and integration initiative that serves as a change agent and a forcing function for innovation, touching every naval program. Since its inception in 2003, FORCEnet has substantially transformed the Navy and Marine Corps in both process and product. FORCEnet is being implemented in coordination with transformation initiatives in the Army, Air Force, and Coast Guard—enhancing efficiency, joint interoperability, and warfighting effectiveness.

FORCEnet is key to the Navy's strategic shift from a platform-centric to a NCO/W environment. This includes how the Navy defines future capabilities-based requirements, develops systems, and delivers combat power to the warfighter. NCO/W derives power from rapid, robust, and secure networking of well-informed, geographically dispersed warfighters that will enable an overpowering tempo and a precise, agile style of maneuver warfare. Using effects-based operations, the aim is to sustain access and decisively impact events ashore. FORCEnet develops and drives command and control doctrine and processes to make commanders at all levels more effective by enhancing efficient use of information, allowing accelerated and improved decision-making.

Toward this goal, the *FORCEnet Functional Concept* was developed jointly by Navy and Marine Corps warfighters and operators, and was approved by the Chief of Naval Operations and the Commandant of the Marine Corps in February 2005. The *FORCEnet Functional Concept* provides the joint, operational foundation for all FORCEnet requirements. It was followed in May 2005 by DCNO (Warfare Requirements and Programs) *FORCEnet Requirements/Capabilities and Compliance (FRCC) Policy*, which codified and implemented all FORCEnet requirements (including enterprise integrated architectures and standards) in the *FORCEnet*



Consolidated Compliance Checklist (FCCC) and established a supporting end-to-end compliance process. These requirements were developed in collaboration with the other Services, the Office of the Secretary of Defense, the Joint Staff, national agencies, combatant commanders, allies/coalition partners, and industry to enhance efficiency and interoperability while supporting Navy integration into the GIG. The FRCC Policy end-to-end compliance includes implementation and integration of a Fleet-led FORCEnet Enterprise Team (FET) process and an Acquisition Community-led FORCEnet Implementation Baseline (FIBL) process, thereby linking OPNAV, Fleet, and the Acquisition Community with a single set of net-centric requirements, architectures, and standards. FORCEnet Enterprise Architecture implementation was further enhanced by the establishment in July 2005 of a Navy-Marine Corps FORCEnet Integrated Architecture Governance structure, which establishes authoritative Naval Enterprise Architecture, places architecture products into configuration management, and moves these architectures into broader DoD access on the DoD Architecture Repository System (DARS). These architectures serve as a foundation for FORCEnet capabilities that will influence our resourcing and acquisition strategies. FORCEnet Enterprise Standards have similarly been put under configuration management and are being moved into broader DoD access on the DoD Information Technology Standards Registry (DISR), with Navy participating in the DoD Information Technology Standards Council. Also in July 2005, the Assistant Secretary of the Navy (Research, Development, and Acquisition) promulgated the *DoN Policy for Acquisition Community Support to Implement FORCEnet Capabilities*, which further implements these FORCEnet requirements and integrated architectures by providing for their verification and testing in DoN acquisition programs to ensure system compliance. This will support the migration of both legacy and developing systems into a NCO/W environment while enhancing investment decisions by identifying potential duplications and gaps in warfighting capabilities

FORCEnet enhanced joint warfighting capabilities were fielded in 2003, 2004, and 2005 through the *Trident Warrior* joint operational event. *Trident Warrior* efforts in 2005 focused on enhanced allied/coalition warfighting capabilities, which will be further developed through *Trident Warrior* events in 2006 and beyond. *Trident Warrior* provides the operational crucible in which NCO/W technology and tactics are demonstrated and assessed, and warfighting requirements and operational processes are refined.

Automated Digital Network System (ADNS)

Description

The ADNS is the Tactical Internet Protocol (IP) Routing and Switching system for all Wide Area Network (WAN) IP services which connect afloat units to the various global shore sites. It provides ship and shore Internet Protocol (IP) connectivity and promotes the efficient use of available satellite and line of sight communications bandwidth. ADNS is engaged in converging all voice, video, and data communications between ship and shore to an IP medium taking full advantage of all RF means aboard ships to transmit data efficiently. Specifically, it automates the routing and switching of tactical and strategic C4I data via Transmission Control Protocol/Internet Protocol (TCP/IP) networks linking deployed battle group units with each other and with the Defense Information Systems Network (DISN) ashore. ADNS uses Commercial Off-the-Shelf (COTS) and Non-Developmental Item (NDI) Joint Tactical Architecture (JTA)-compliant hardware (routers, processors, and switches), and commercial-compliant software in a standardized, scalable, shock-qualified rack design.

Status

Three hundred and thirteen shipboard and eight shore sites (Network Operations Centers) Increment I and Increment II systems have been fielded through FY 2005. Afloat installations include amphibious ships, carriers, cruisers, command ships, destroyers, frigates, and submarines. The shore installations of multiple ADNS nodes have been fielded at the four major sites supporting Surface Ship Operations (NCTAMS LANT, EURCENT, PACIFIC, and at NCTS Bahrain) and at the four major sites supporting Submarine Afloat Communications (Broadcast Control Authority Sites at LANT, PAC, COMSUBGRU Eight in Italy, and COMSUBGRU Seven in Japan). Current FYDP plans include replacing all currently deployed systems with ADNS Systems capable of meeting Network centric, FORCEnet, and future DoD Initiatives. This will be accomplished in accordance with the fleet commanders' coordinated SHIPMAIN process. Fielding plans starting in FY 2005 include installation of ADNS Increment II. In FY 2006 ADNS Increment IIa will provide additional capability to Force level ships only. Increment III will be installed in FY 2008 with a planned IOC for late FY 2008 or early FY 2009. Increment III in alignment with the Tactical Switching program will field only two shore locations NCTAMS Lant and Pac (RNOSC East and West). Increment II, IIa, and III will replace End of Life System Hardware, eliminate the current 2 Mbps IP Throughput bandwidth bottleneck, converge all Ships Voice, Video, and data on a Dual Stack IPv4/IPv6, Cipher text, IP core network architecture.

Developers

SPAWAR Systems Center Code 2631; San Jose, California
 Science Applications International Corporation;
 Arlington, Virginia
 Cisco; San Jose, California



Advanced Tactical Data Link Systems (ATDLS)

Description

The ATDLS program develops, fields, and supports joint and coalition Tactical Data Link (TDL) capabilities. These joint TDLS include terminals, gateways, networks, and support initiatives that improve TDL connectivity, promote equipment commonality and interoperability, and provide training and fleet support. Link-11 is used by Navy, Air Force, Army, Marine Corps, and allied ships and aircraft, many of which are also equipped with Link-16. In accordance with the Joint Tactical Data Link Management Plan (JTDLMP), Link-11, which uses the M-series message standard, is scheduled to be shut down no later than 2015. Link-16, which uses the J-series message standard, has been designated as the DoD primary Tactical Data Link. The Navy is implementing Link-16 in most of its link-capable platforms. As the JTDLMP approved replacement for Link-11, Link-22 is a multi-national development effort and will use the J-Series message standard. Major supported efforts are as follows:

- > **Terminals:** Joint Tactical Information Distribution System (JTIDS), Multifunctional Information Distribution System (MIDS) Low Volume Terminal (LVT), MIDS Joint Tactical Radio System (JTRS), and the Common Shipboard Data Terminal Set (CSDTS)
- > **Gateways:** Command and Control Processor (C2P), Common Data Link Management System (CDLMS), Next Generation C2P, and Common Link Integration Processing (CLIP)
- > **Support Initiatives:** Joint Interface Control Officer (JICO) Support System (JSS), Dynamic Network Management (DNM)

These capabilities allow more effective employment of fleet units by improving timeliness, accuracy, and content of tactical data transfer.

Status

See following FORCEnet program descriptions on pages 130-168.

Developers

Data Link Solutions (DLS); Cedar Rapids, Iowa
ViaSat Inc.; Carlsbad, California
Advanced Programming Concepts; Austin, Texas
BAE Systems; Wayne, New Jersey

Base Level Information Infrastructure (BLII)

Description

BLII is the program of record that modernizes IT facilities at 16 OCONUS Navy bases, stations, and headquarters. It installs new, or upgrades existing infrastructure to provide state-of-the-art IT capability. Further, the program installs the hardware, software, and enterprise management tools to enable a fully integrated,

interoperable, and secure IT network for rapid and reliable transfer of data, voice, and video. The program also replaces or upgrades obsolete telephone switches at 140 CONUS and OCONUS locations. Major functional areas of BLII are:

OCONUS IT infrastructure modernization

- > Installs/modernizes base and building cable plants; WAN, BAN, and LAN electronics; information assurance; network management; configuration management; and asset management capabilities
- > Provides engineering and operations expertise at the IT Service Centers and the IT Outreach Centers
- > Installs and sustains system hardware, software, and related training

OCONUS force protection (IT)

- > Installs/modernizes OCONUS pier IT infrastructure to IT-21 standards (Equal to or better capability pier-side as ships had at sea)
- > Provides engineering, operations and maintenance support to the newly installed IT infrastructure
- > Expands SIPRNET capability at OCONUS locations

Naval Network and Space Command (NNSOC) telephone switch replacement/modernization

- > Replaces obsolete telephone switches and upgrades firmware and software on a progressive schedule to ensure compliance with JCS directives and the recently enacted Public Law 107-314 at the 140 NNSOC telephone switch locations that service our forward deployed OCONUS and CONUS support forces
- > Modernizes telephone switch cable plants

Status

The backbone phase of the OCONUS IT infrastructure modernization is rapidly coming to conclusion at the 16 designated overseas fleet concentration centers. The next major phase of the OCONUS IT modernization is to bring users to the new physical infrastructure followed by the migration of these users to the new OCONUS enterprise network. Funding is in place to continue this evolution to include technical upgrades and technology insertion through FY 2011. The replacement and upgrade of the Navy's telephone switches is accomplished on a progressive and systemic schedule to meet the OSD/Joint Staff mandated timeframe.

Developers

Navy policy is to procure only hardware and software from the DISAJITC tested/certified/interoperable "Approved Products List." All hardware and software procured and installed in conjunction with the BLII POR is under the cognizance of PEO C4I and Space (PMW 790). CNO N71, NETWARCOM, and the PMW maintain close synchronization in the requirements validation, acquisition, installation, and logistics process.



Command and Control Processor (C2P)

Description

The C2P serves as the interface and the data translator between the surface platform's Combat Direction System (CDS) and the Tactical Data Links (TDL). It is considered a gateway as described in the ATDLs discussion above. It is the data forwarder between Links-11 and 16. In 1984, implementation of JTIDS/Link-16 based CDSs commenced with the Advanced Combat Direction System (ACDS) Model 5. The ACDS Model 5 contract had an option for development of a C2P to provide the functionality of the TDL Communication Processor. Also in 1984, the Operational Requirement (OR) for the C2P was established. The operating program of UYQ-62 (V), the initial C2P variant, was coded in CMS-2 and hosted in a single UYK-43. When development of ACDS Model 5 was delayed, the C2P was modified to support Model 4 (Link-11) based surface platforms. This allowed installation of C2P and JTIDS/Link-16 aboard Model 4 AEGIS and ACDS Block 0 ships. With this capability, C2P serves as a gateway to connect a Link-16 network to a legacy Link-11 network. C2P Model 4 successfully completed OPEVAL in a combined test with Link-16 in FY 1994. C2P Model 5 successfully completed OPEVAL in FY 2000. The approaching obsolescence of the C2P computer brought about the need to identify a suitable hardware set to re-host the functionality of the C2P. As a practical and cost-effective option, the C2P re-host initiative was joined with another initiative that encompassed the concept of co-locating multiple tactical link management, coordination, and monitoring in a single host.

Status

The C2P is fully fielded with the capability being re-hosted as software within the Common Data Link Management System and Next Generation C2P.

Developers

GSA/Anteon; Fairfax, Virginia

DRS Inc; Wyndmoor, Pennsylvania

Common Data Link Management System (CDLMS)

Description

The CDLMS initiative extends the functionality of the Command and Control Processor by consolidating several functions previously performed by separate systems or subsystems, and providing improved Human Machine Interface (HMI) and Link maintenance. CDLMS also incorporates the Link Monitoring System (LMS) along with supporting the initial phase of development of the Common Shipboard Data Terminal Set (CS-DTS). The CS-DTS initiative provides the next generation Link-11 data terminal replacing legacy Link-11 terminal hardware while incorporating Multi-Frequency Link-11 (MFL), Satellite Link-11, and supporting the initial Dual Net Link-11. Re-hosting the C2P within CDLMS provides the same functionality in COTS hardware, namely the

UYQ-70 console, which makes the system easier and less expensive to upgrade. The CDLMS integrates the CSDTS and C2P (Re-host) in a set of VME cards to provide consolidated displays and controls to monitor multi-TDL networks simultaneously. The CDLMS/ C2P(R) program has fielded the USQ-86 (V), consisting primarily of an UYQ-70 EPS housing four VME chassis. Three of these are populated with VME card sets for the following: C2P(R), CSDTS, and the Link Management/ Monitoring Component. This hardware configuration supports the transformation to Next Generation Command and Control Processor (NGC2P), which will introduce the Beyond Line of Sight Capabilities Joint Range Extension (JRE) and Link 22. CDLMS has successfully completed Aegis and SSDS Combat System Integration and Test (CSIT) and is currently being installed. CSDTS implementation is ongoing, enabled by, but separate from, CDLMS/C2P(R).

Status

CDLMS will be fully fielded by the end of FY 2006. NGC2P is scheduled to achieve IOC in FY 2007.

Developers

GSA/Anteon; Fairfax, Virginia
DRS Inc.; Wyndmoor, Pennsylvania

Common Link Integration Processing (CLIP)

Description

The Navy and Air Force have jointly entered into the CLIP initiative. CLIP is envisioned as an open architecture software-based common Tactical Message processing and integration capability with applications across various military platforms and installations, including air, surface, C2 shore sites, and ground-based tactical units. A chief objective is to provide greater interoperability and reduce implementation cost. CLIP will be an evolutionary spiral development process with functionality specified at each delivery point to match platform TDL requirements. It will provide the interface to all the various communication systems including current terminals and radios as well as those under development such as JTRS. It will act as a gateway providing translations and data forwarding to legacy systems and be the primary interface to any host system (i.e., combat). CLIP is envisioned to be primarily software that can reside on any operating system or hardware.

Status

A CLIP MOA between PEO-C4I & Space and Air Force Electronic Systems Center was signed in August 2003. All acquisition program documentation for Milestone B is complete and the program received Milestone B approval by ASN RD&A in May 2005. By MOA, MH-60 will be the lead USN platform, scheduled for IOC in first quarter 2009. Contract was awarded to Northrop Grumman in June 2005.

Developers

Northrop Grumman; Reston, Virginia



Combined Enterprise Regional Information Exchange System Maritime (CENTRIXS-M)

Description

The CENTRIXS-M exists as a web-centric GOTS and COTS based global network that permits multinational information sharing. CENTRIXS-M support coalition, Allied, and Joint interoperability and information exchange by providing email, web services, collaboration, and products such as Global Command and Control System Integrated Imagery and Intelligence (GCCS-I3), components for the Common Operational Picture (COP), and Common Intelligence Picture (CIP). In addition, it enables ship-to-ship and ship-to-shore Web replication, secure e-mail, chat communications over SATCOM with allied/coalition partners. CENTRIXS-M also provides a ship-to-shore SATCOM IP path to compliment existing ship-to-ship HF e-mail capabilities. The network infrastructure is implemented by using a combination of network switches, routers, crypto, servers, PCs, and commercial networks technologies. CENTRIXS supports seven different enclaves available to the warfighter: CENTRIXS Four Eyes (AUSTRALIA/CANADA/U.K./U.S.); CENTRIXS Japan (J); CENTRIXS Korea (K); NATO Initial Data Transfer System (NIDTS); Global Counter Terrorism Task Force (GCTF); Combined Naval Forces CENTCOM (CNFC); and Multi Coalition Forces Iraq (MCFI). Currently, the Pacific Region Network Operations Center (PRNOC) is the only network hub for all CENTRIXS connectivity. CENTCOM has directed that all ships deploying to NAVCENT AOR have CENTRIXS capability.

Status

CENTRIXS-M became a POR 1Q FY 2006. Milestone C Decision for Inc 1 is scheduled for second quarter FY 2007. Milestone B Decision for Inc 2 is scheduled for second quarter FY 2009. Currently, 143 out of 157 Navy ships have CENTRIXS-M connectivity. IOC for Inc 1 is fourth quarter FY 2007, Inc 2 to be determined. FOC for Inc 1 is fourth quarter FY 2018 if Inc 2 is not funded.

Developers

Hardware for procurement and development of ISNS is under the cognizance of PEO C4I/Space PMW 160 as well as OPNAV (N71). These organizations work together to identify and implement the latest technologies to ensure proper implementation into the program. Engineering, development, integration, installation, training, and life cycle support will be accomplished through Navy and Defense Department activities.

Commercial Satellite Communications: Commercial Wideband SATCOM Program (CWSP)

Description

The CWSP, formerly known as Challenge Athena, is a full-duplex, high data-rate communications link that operates in the C-band spectrum up to 2.048 Mbps. CWSP provides access to voice, video, data, and imagery circuit requirements. It supports aircraft carriers (CV/CVN), amphibious ships (LHA/LHD/LPD) and other selected ships, including hospital ships (T-AH) and submarine tenders (AS). Terminals are also installed at schoolhouse locations in San Diego, California and Norfolk, Virginia.

Examples of specific communications circuits that are provided include: Distributed Common Ground Surface System-Navy (DCGS-N), Video Tele-Conferencing (VTC), Video Information Exchange system (VIXS), Video Tele-Medicine (VTM), Video

Tele-Training (VTT), Afloat Personal Telephone Service (APTS), Integrated Digital Switching Network (IDSN) for voice/telephone, Secret/ Unclassified Internet Protocol Router Networks (SIPRNET/NIPRNET), and Joint Worldwide Intelligence Communications System (JWICS). The CWSP terminal uses commercial satellite connectivity and COTS/NDI Equipment. It has transitioned from augmentation, to surge, and in recent years has become an integral part of Navy's SATCOM architecture because of the existing and extremely overburdened military satellite communications systems.

Status

The majority of CWSP terminals procured have been installed on 35 ships. Four additional terminals are planned on new construction ships (CVN and LPD). Commercial leasing options for satellite capacity continue to be evaluated. Options to refurbish the CWSP (WSC-8) terminal are being considered.

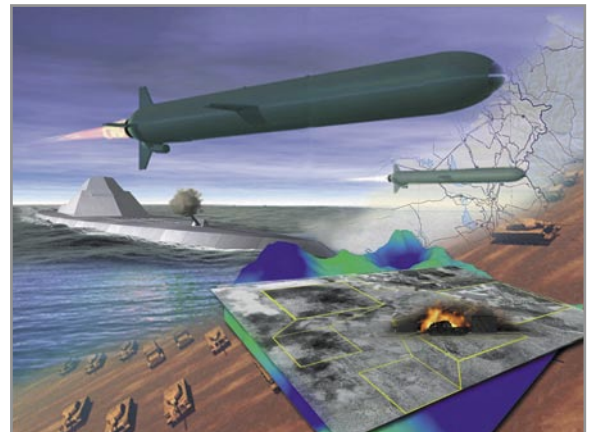
Developers

Various COTS/NDI

Distributed Common Ground System-Navy (DCGS-N)

Description

DCGS-N is the Intelligence, Surveillance, Reconnaissance, and Targeting (ISR&T) processing and exploitation component of FORCENET that will support all levels of the command and control decision process. The Navy DCGS merges ISR&T, mission planning, and situational awareness functions into a Web-enabled, network-centric, joint-interoperable architecture. DCGS-N will support the Navy's command and control tiers of numbered fleet command ships and ashore command centers (Tier 1); Carrier Strike Group/Expeditionary Strike Group (Tier 2); and unit level strike platforms (Tier 3). Each tier will have a scalable set of DCGS-N capabilities to support its assigned roles and missions.



DCGS-N will utilize network-centric, multi-intelligence processing and exploitation to support the Task, Post, Process, Use (TPPU) process for the Commander Joint Task Force and the maritime warfighter. Leveraging existing GCCS-M, JSIPS-N, and TES-N programs, DCGS-N includes timely interfaces to national, joint, theater, and organic sensors. The aim points generated by DCGS-N will be provided to a variety of air, surface, and sub-surface launched precision guided weapons systems. DCGS-N will be interoperable with the DCGS elements of the other services through the use of the DCGS Integration Backbone (DIB) as the foundation of the DCGS-N architecture.

Status

A total of 34 systems are currently planned for installation between FY 2007 and FY 2010 on aircraft carriers, large-deck amphibious ships, fleet command ships, and designated shore-based reach-back support sites. Fleet Forces Command and OPNAV are working together to determine the appropriate afloat/shore-based architecture and fielding plan that will meet fleet ISR exploitation and targeting requirements.

Developers

Northrop Grumman; Linthicum, Maryland
Raytheon; Garland, Texas
SAIC; Columbia, Maryland
BAE Systems; Rancho Bernardo, California

Deployable Joint Command and Control Capability (DJC2)

Description

The DJC2 is a joint DoD transformation initiative, with Navy as the lead component, to provide a standardized deployable Command and Control (C2) capability for Combatant Commanders (COCOMs) and Joint Force Commanders (JFCs). Fielding of DJC2 will greatly reduce the ad hoc nature of Joint Task Force (JTF) C2. DJC2 will provide the JFC with a level of C2 application integration that currently only exists for the Component Command (and below) headquarters. Theater level elements (e.g., Joint Communications Support Element) will provide the communications links for the fully deployed system. DJC2 will build upon the Joint Global Command and Control System (GCCS-J), the Joint Forces Command developed Collaborative Information Environment (CIE) toolkit and existing joint and service C2 programs (especially the GCCS family of systems), and lessons learned from Operation Enduring Freedom and Operation Iraqi Freedom, to equip the COCOMs and JFCs with a tested C2 system that is:

- > Horizontally and vertically integrated across all levels of command
- > Interoperable across joint, coalition, interagency, Non-Governmental Organization/Private Volunteer Organization (NGO/PVO) realms



- > Robust, scalable, and rapidly deployable, including an en-route capability

Spiral development and fielding of evolving technology will help to meet COCOM and JTF requirements.

Status

The JROC validated the DJC2 Mission Need Statement (MNS) in February 2002. DJC2 received Milestone A approval in May 2002. The AoA was completed in July 2003 and the Operational Requirements Document (ORD) approved by the Joint Requirements Oversight Council (JROC) in September 2003. Milestone B approval was granted in March 2004. The Capability Production Document (CPD) was approved by the JROC in November 2004. The Navy acquired the developmental experimentation suite for Joint Forces Command in FY 2004. The initial DJC2 operational test unit (OTU) was delivered to the United States Southern Command in September 2005. Initial Operational Test and Evaluation (IOT&E) will be conducted in FY 2006. The second DJC2 OTU was used to support Hurricane Katrina disaster relief operations in New Orleans, Louisiana and will be delivered to the Pacific Command in FY 2006, followed by delivery of two systems to the European Command; delivery of an additional delivery to the Pacific command; delivery to a Joint Forces Command component; and delivery of two systems to the Joint Communications Support Element (JCSE) (supporting Central Command and other users) in FY 2007.

Developers

L3 Communications, Titan Group; Panama City, Florida
 Lockheed Martin; Panama City, Florida
 Northrop Grumman; Arlington, Virginia
 Best Manufacturing Processes Center of Excellence;
 College Park, Virginia

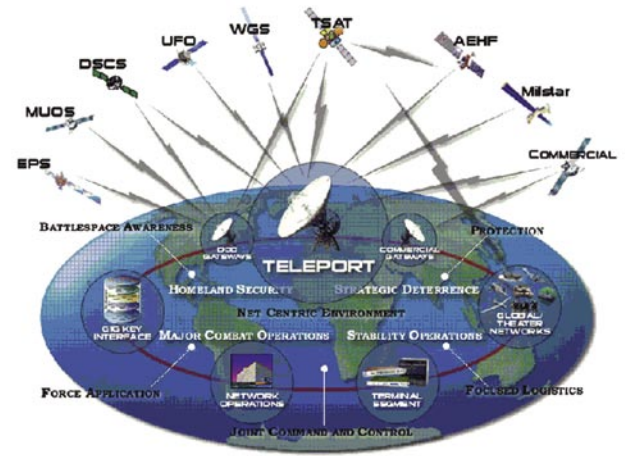
DoD Teleport

Description

The DoD Teleport links the space segment with the shore infrastructure and provides tactical users a worldwide communications interface to the Global Information Grid. Through multiple radio frequency media (military and commercial bands), Teleport provides inter-theater reach back into the Defense Information Systems Network (DISN) and service C4I systems, as well as intra-theater communications support for tactical users. Teleport consists of six primary sites and one secondary site. The Navy operates and maintains Teleports at Wahiawa, Hawaii; Northwest, Virginia; Lago Patria, Italy; and Bahrain. Non-Navy Teleports sites are located at Fort Buckner, Okinawa, Japan; Camp Roberts, California; and Landstuhl/Ramstein, Germany.

Status

DoD Teleport is an Acquisition Category (ACAT) 1AM program with OSD (NII) as the Milestone Decision Authority (MDA).





Acquisition Decision Memorandum (ADM) 5 May 2000 established DISA as the Executive Agent and Joint Requirements Oversight Council Memorandum (JROCM) 044-01 of March 2001 established Service Teleport site responsibility as well as Navy as the Teleport Requirements Sponsor. Teleport entered Milestone C for Generation One in July 2002 and reached IOC 1 with X, C, and Ku-bands in April 2004. In July 2004, the JROC approved the DoD Teleport Operational Requirements Document (ORD) Generation Two update, which will support a Milestone C decision planned in early 2006. Teleport Generation Two will provide military Ka-band and initial network-centric IP capability.

Developers

Arrowhead; Alexandria, Virginia
ViaSat; Carlsbad, California
Raytheon; St. Petersburg, Florida
ITT; Colorado Springs, Colorado

Defense Messaging System (DMS)

Description

The DMS initiative is an OSD-mandated program designed to eliminate the multitude of expensive “stovepipe” legacy record messaging systems that provide organizational and individual message traffic between operational units. The DMS architecture has been derived using the Multi-command Required Operational Capability (MROC) requirements and has been targeted to provide the armed services and agencies with a high assurance messaging capability. The DMS provides messaging, directory, and management services.

Status

Current DoD implementation of DMS closed the DMS Transitional Hubs (DTHs) for GENSER on 30 September 2003 and for Emergency Action Message (EAM) messaging on 22 February 2004. Navy is transitioning to a Web-based interface known as the DMS Expanded Boundry Solution (DEBS). This transition eliminates costly client/server architecture and consolidates the DMS service providers from 21 sites down to two. The transition to DEBS will be completed in 2008 for DMS Ashore and 2011 for DMS Afloat (Funded from the Tactical Messaging Program).

Developers

Lockheed Martin; Manassas, Virginia

Dynamic Network Management (DNM)

Description

DNM will effectively increase Link 16 Network throughput and provide the warfighter greater flexibility in the use of Link-16. DNM will facilitate automated net entry/exit of additional platforms in the future, including smart weapons with a Weapons Data Link (WDL), and will provide a real-time capability to modify Link-16 network parameters with existing messages

to meet evolving changes in the theater. DNM will also enable capabilities such as IP over Link-16, variable update and throughput rates, monitoring and analyzing of real-time network loading, and executing stacked and multi-net operations. DNM is essential to reducing Link-16 network saturation and is an enabler for the JICO Support System (JSS). It also provides essential support for time critical targeting and time critical strike. DNM includes the following capabilities: Time Slot Reallocation (TSR), Dynamic Multi-netting, Network Control Technology (NCT) used by the JICO, and a new contention access capability called SHUMA.

Status

The Air Force awarded Northrop Grumman contract for JICO Support System (JSS) Block 1, which incorporated DNM technology, in May 2005. Initial JSS Block 1 is planned for lab testing in February 2006 followed by shipboard testing in May 2006. The DNM program will enable a fully tested and interoperable version of the platform's host system, known as the Joint Host Demand Algorithm (JHDA) to support the Time Slot Reallocation (TSR) protocol, in the shipboard Command and Control Processor (C2P) in early FY 2006. TSR is also being expanded to enable further use of it on the Link 16 network (TSR RC). A random access mode that provides a nodeless, flexible, and scalable means of adapting the network to rapid changes in topology and message traffic conditions, known as SHUMA, is being lab tested. Both SHUMA and TSR RC will enable fully ad-hoc, dynamic network operations on Link 16.

Developers

SPAWARSYSCEN; San Diego, California

Northrop Grumman; San Diego, California

Global Broadcast Service (GBS)

Description

The GBS can augment and interface with other communications systems to provide a virtual two-way network to deliver a high-speed, one-way flow of high-volume information disseminated quickly by broadcast to proliferated, low-echelon, geographically dispersed users supporting situational awareness, weapons targeting, intelligence, and homeland defensive operations. GBS can support military operations with U.S. allies or coalition forces and non-DoD governmental organizations. GBS will revolutionize communications with increased capacity, faster delivery of data, near-real-time receipt of imagery and data to the warfighter, and reduced over-subscription of current MILSATCOM systems.

Status

The Navy is fielding receive-suites on carriers, larger-deck amphibious warfare ships, command ships, guided missile submarines (SSGN), and half of the nuclear-powered attack submarines (SSN). Guided missile cruisers, destroyers, and strategic missile submarines are required, but not funded. Transition



to an IP-based enhanced architecture should be completed by FY 2007. The enhanced architecture provides a nearly doubling world-wide capacity with potentially eight times more coverage. Afloat-platform capability will have up to six multiple-receive channels (each up to 24 Mbps) and support additional security enclaves (each of 70 Mbps). Compartmented enclaves such as a top secret or allied broadcast are not funded. Within bandwidth there are no constraints on the number of concurrent video stream products received for viewing on computer workstations across attached networks. The enhanced architecture permits improved sharing and reallocation of broadcast coverage and bandwidth between, users, information product, media types, and security levels. The system is more queue driven, priority based rather than scheduled based. On the larger, more capable ships or fixed shore platforms the enhanced architecture will also permit multiple satellite receive capability, including UFO and WGS or commercial satellites, concurrently.

In January 2005 the DoD approved new and maturing operational requirements defining spiral development, including automated satellite spot beam sharing (important naval requirement), two-way transmit receive suites, better management of new space segment resources, enhanced GIG integration, suit-case and rucksack portable receive suites, communications-on-the-move ground mobile receive suites, terrestrial wireless rebroadcast receive suites, global system-wide management and content sharing, flexible system restoration, and bandwidth efficiency metric reporting for better planning and system allocation planning.

Developers

U.S. Air Force, Space and Missile Systems Center/Raytheon;
El Segundo, California

Global Command and Control System–Maritime (GCCS-M)

Description

As the naval implementation of the GCCS, GCCS-M is the OSD-designated Command and Control (C2) migration system for the Navy. The evolutionary integration of previous C2 and intelligence systems, GCCS-M supports multiple warfighting and intelligence missions for commanders at every echelon, in all afloat, ashore, and tactical naval environments, and for joint, coalition, and allied forces. GCCS-M meets the joint and service requirements for a single, integrated, scalable C2 system that receives, displays, correlates, fuses, and maintains geo-locational track information on friendly, hostile, and neutral land, sea, and air forces and integrates it with available intelligence and environmental information. Key capabilities include: multi-source information management, display, and dissemination through extensive communications interfaces; multi-source data fusion and analysis/decision-making tools; and force coordination. More than 56 joint and naval systems interface with GCCS-M to exchange data.



The GCCS-M program was designated an ACAT-IAC program in March 2001. GCCS-M Version 3.1.2.1 was released to the fleet in FY 2001, and included major enhancements to GCCS-M's intelligence and warfighting software applications. Version 3.1.2.1 reduces time-latency problems with Common Operational Picture (COP) track data, and enables high-data-rate communication-configured ships and shore headquarters to exchange COP track information via a faster IP transmission method. GCCS-M 4.0 completed Operational Test on USS *Nimitz* (CVN 68), COM-PACFLT HQ, and COMSUBPAC HQ and was approved for full-rate production in FY 2005. GCCS-M 4.0 is a significant hardware, software and capability upgrade to the circa-1998 3.X product and is synchronized with roll-out of similar GCCS products by Joint commands and other Services. GCCS-M 4.X will deliver to all designated warships and ashore installations by the end of FY 2010. GCCS-M 4.1 software capability upgrade was approved for Milestone B in FY 2005. GCCS-M 4.1 will deliver software-only capability improvements in late 2007 in response to emerging warfighter C4I requirements and evolving security and technology standards. GCCS-M will transition to the Joint Command and Control (JC2) capability based on Net-Centric Enterprise Services (NCES) over the FYDP as these joint programs deliver capability that can be implemented to naval afloat and ashore sites.

Status

GCCS-M Afloat is installed on 260 ships and submarines throughout the Navy. GCCS-M Ashore has been installed at 36 sites including the Chief of Naval Operations Navy Command Center; five fleet commander headquarters; and various allied/NATO sites.

Developers

Various COTS/GOTS

Information Assurance (IA)

Description

IA is defined as information operations that protect and defend information and Information Systems (IS) by ensuring their authenticity, availability, confidentiality, data integrity, and non-repudiation. The Navy's primary IA program is Information Systems Security Program (ISSP).

FORCENet is the Navy's component to the DoD Global Information Grid. The Navy has embraced a Defense-in-Depth strategy to protect FORCENet by employing multiple layers of protection starting at the desktops. The IA Technical Framework (IATF) has been adopted and divides ISSP resources into three fundamental categories: technology, operations, and people. The IATF provides a documented source of technical solutions and guidance mapped to the Defense-in-Depth goals. Selection, training, and retention of network security specialists are vital elements in our ISSP arsenal.





ISSP focuses on development, acquisition, implementation, upgrade of the CND products and services such as firewalls, guards, Virtual Private Networks (VPN), intrusion detection systems, electronic key management systems, Public Key Infrastructure (PKI), and Common Access Cards (CAC). ISSP also focuses on the development of new cryptographic technology that can support a wide variety of applications and algorithms.

Status

Acquisition vehicles are in place for TYPE I Communications Security (COMSEC) and TYPE II COTS technologies to support the Navy's bandwidth requirements for secure voice and data, and PKI under the expanding umbrella of Key Management Infrastructure highlighted by the Navy's contributions to the DoD's Crypto Modernization (CM) program.

Developers

Space and Naval Warfare Systems Command (SPAWAR) provides operational support to Navy warfighter by disseminating IA information and providing technical services.

Integrated Broadcast Service/Joint Tactical Terminal (IBS/JTT)

Description

The IBS is a system-of-systems that will migrate the Tactical Receive Equipment and Related Applications Data Dissemination System (TDDDS), Tactical Information Broadcast Service (TIBS), Tactical Reconnaissance Intelligence Exchange System (TRIXS), and Near Real-Time Dissemination (NRTD) system into an integrated service with a common format. The IBS will send data via communications paths, such as UHF, SHF, EHF, GBS, and via networks. This program supports Indications Warning (I&W), surveillance, and targeting data requirements of tactical and operational commanders and targeting staffs across all warfare areas. It comprises broadcast-generation and transceiver equipment that provides intelligence data to tactical users. The Joint Tactical Terminal (JTT) will receive, decrypt, process, format, distribute, and transmit tactical data according to preset user-defined criteria across open-architecture equipment. JTT will be modular and will have the capability to receive all current tactical intelligence broadcasts (TDDDS, TADIXS-B, TIBS, and TRIXS). JTT will also be interoperable with the follow-on IBS UHF broadcasts. However, the current JTT form factor does not meet space and weight constraints for a majority of the Navy and Air Force airborne platforms. Therefore, to ensure joint interoperability, the Navy and Air Force will continue to support the current Multi-mission Airborne Tactical Terminal (MATT) through a low cost Pre-Planned Product Improvement (P3I) program until the transition to an IBS capable JTRS airborne variant starting in FY 2007.

Status

A receive-only JTT was delivered to the Navy for early integration efforts in the third quarter FY 2000. The Navy received the first four fully capable JTTs (with transmit capability) in third quarter

FY 2001. The Navy commenced shipboard installations in fourth Quarter FY 2001 for developmental testing. OT&E was completed in fourth quarter FY 2005. JTT fielding has occurred from 2001 to 2004. Additional installations are anticipated in 2006 and 2007. The JTTs will continue to receive the legacy broadcasts (e.g., TDDS, TIBS, TRIXS) until next-generation broadcast services are developed and fielded.

Developers

IBS: Titan/BTG; Fairfax, Virginia

JTT: Raytheon Systems; St. Petersburg, Florida

Integrated Shipboard Network System (ISNS)

Description

The ISNS program is a derivative of the common elements from various other programs of record with the purpose of providing robust LANs on all Navy ships. ISNS provides integration and support for all requisite classifications (i.e., SCI, TS, secret, non-U.S., and unclassified). It enables real-time information exchange within the ship and between afloat units, Component Commanders, and Fleet Commanders. It is also a key factor in the implementation of the Navy's portion of Joint Vision 2020. The ISNS program implements networks using a combination of network switches, hubs, routers, servers, PCs and commercial network software application technologies. It provides the capability to establish connectivity to the Defense Information Systems Network (DISN) WAN for global information distribution. In addition, it provides internal information dissemination capabilities for individual fleet units. By providing the infrastructure for shipboard C4I programs, ISNS facilitates implementation of the Navy's IT-21 strategy and is an enabler for network-centric warfare. It provides the transport medium for Web-enabling all IT-21 related programs (i.e., E, GCCS-M, Voice-Video-Data (VVD)). ISNS networks support the robust information flow requirements necessary to achieve *Sea Power 21* capabilities, as well as providing the backbone for information interoperability with coalition forces (CENTRIXS-M).

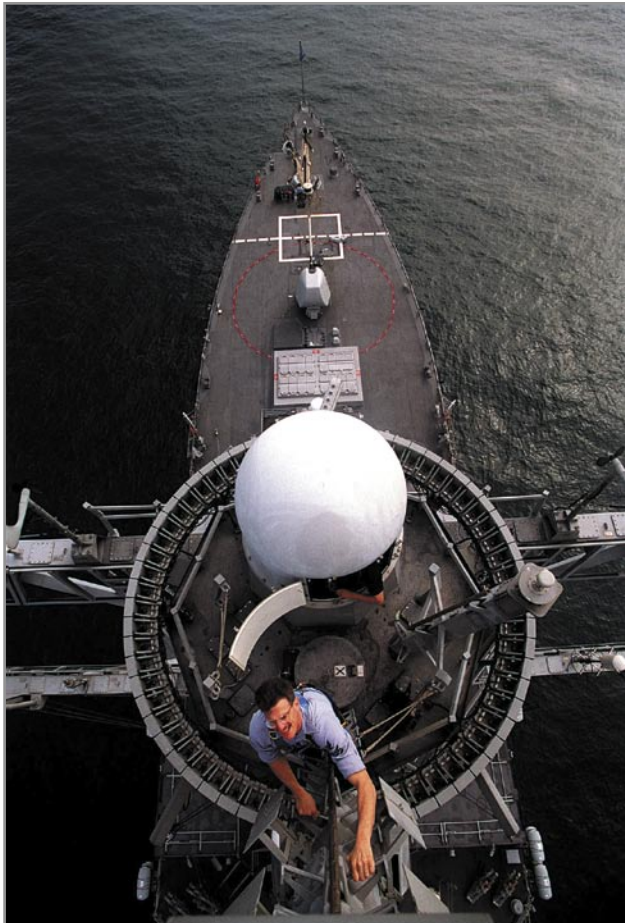
Status

ISNS installations have transitioned from ATM networks to the Gigabit Ethernet architecture. Under current procurement and installation funding, IOC for ISNS Inc 1 is fourth quarter FY 2011; Inc 2 first quarter, FY 2013; Inc 3 to be determined. ISNS was designated as an ACAT II Major Weapons Systems on 16 August 2004.

Developers

Hardware for procurement and development of ISNS is under the cognizance of PEO C4I/Space PMW 160 as well as OPNAV (N71). These organizations work together to identify and implement the latest technologies to ensure proper implementation into the program. Engineering, development, integration, installation, training, and life cycle support will be accomplished through Navy and Defense Department activities.





Joint Interface Control Officer (JICO) Support System (JSS)

Description

The JSS is a “tool set” enabling the JICO to plan, monitor, and manage the Multi-Tactical Data Link (TDL) network in support of the Joint Force Commander. Using the DNM tool Network Control Technology (NCT), the JICO can accommodate required changes to the operating Network including unplanned entry and egress of the Link 16 platforms. In his role as the manager of the multi-TDL network, the JICO contributes to maintaining the near real time Common Tactical Picture and responds to the requirements of the Joint Data Network (JDN) manager.

Status

Milestone C for JSS is scheduled for FY 2007 with full-rate production to follow in FY 2008.

Developers

Northrup Grumman; Reston, Virginia

Joint Tactical Information Distribution System (JTIDS)

Description

The JTIDS Link 16 terminal provides rapid, secure, jam-resistant (frequency-hopping) communications, navigation, and identification capabilities appropriate for military use up to and including secret information. A joint program directed by OSD, JTIDS provides crypto-secure, jam-resistant, and low-probability-of-exploitation tactical data and voice communication at a high data rate to Navy tactical aircraft and ships and Marine Corps units. JTIDS also provides capabilities for common-grid navigation and automatic communications relay. It has been integrated into numerous platforms and systems, including Navy aircraft carriers, surface warships, amphibious assault ships, and E-2C Hawkeye aircraft; Air Force Airborne Warning and Command System (AWACS) aircraft; and Marine Corps Tactical Air Operations Centers (TAOCs) and Tactical Air Command Centers (TACCs). Other service and foreign country participants include the Army, Great Britain, and Canada. Additionally, JTIDS has been identified as the preferred communications link for Theater Ballistic Missile Defense programs. JTIDS is the first implementation of the Link-16 Joint Message Standard (J-series) and provides the single, near real-time, joint data link network for information exchange among joint and combined forces for command and control of tactical operations.

Status

The Air Force is the lead service for JTIDS. The program successfully completed OPEVAL in August 1994 and was authorized to enter full-rate production in March 1995. Production is now complete. The Multifunctional Information Distribution System (MIDS) Low Volume Terminal (LVT) is the Pre-Planned Product Improvement (P3I) to the JTIDS terminal. The MIDS Joint Tactical Radio System (JTRS) terminal is the follow-on to MIDS LVT.

Developers

GEC-Marconi Electronics Systems; Wayne, New Jersey
Rockwell-Collins Avionics; Cedar Rapids, Iowa
Northrop Grumman; Bethpage, New York

Joint Tactical Radio System (JTRS)**Description**

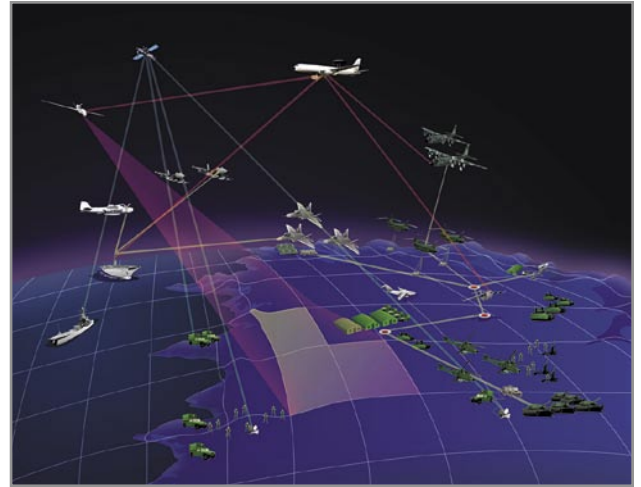
The JTRS is a software-programmable multi-band, multi-mode family of networked radios capable of simultaneous voice, data, and video communications. The program will effect the migration of more than 25 radio families, encompassing thousands of radio systems, to the JTRS family of radio systems. All radios will be compliant with Software Communications Architecture (SCA), a single, open-system architecture. SCA, now at version 2.2, provides the standards for all JTR software in the future. In addition, JTRS will be developed with a focus toward integrated GIG transformational capabilities. At the same time the JTRS will be backwards compatible with selected legacy radio systems. At present there are five designated clusters that make up the JTRS family across DoD: handheld; man-packed; vehicular; airborne/maritime/fixed; and small form-fit. The JTRS requirements are derived from the Joint Tactical Radio System (JTRS) Operational Requirements Document (ORD) Version 3.2 dated 9 April 2003. This Joint ORD is updated annually to incorporate additional validated requirements gathered from all the DoD Services and is currently being converted to a Capabilities Development Document. JTRS will be an enabler of FORCEnet by implementing current tactical communications standards in addition to future higher data rate networking waveforms. The first iteration of JTRS for the maritime forces will satisfy narrowband waveform requirements of the JTRS ORD. This will include HF, VHF, UHF Line-of-Sight (LoS), and current and future UHF SATCOM requirements. Follow-on spiral development for maritime and aircraft platforms will provide for narrowband and wideband requirements derived from the ORD, to include the Wideband Networking Waveform.

Status

In February 2005, USD (AT&L) established a Joint Program Executive Office (JPEO) for the JTRS program. In August 2005, the JPEO determined that the JTRS program required restructuring to reduce program risk. USD (AT&L) is expected to establish the way ahead for the JTRS program in early 2006.

Developers

Manufacturers to be determined in open competition.





Lightweight Super High Frequency Satellite Communications

Description

The Super High Frequency (SHF) Satellite Communications (SATCOM) terminal AN/WSC-6(V) and parabolic antenna enables Navy ships to access the Defense Satellite Communications System (DSCS) for reliable, secure, beyond line-of-sight information exchange at medium-to-high data rates with other fleet units; fixed and mobile joint and allied forces; Navy C4I commands ashore. This capability is provided by upgraded and new WSC-6 terminal variants and enhancements to the submarine High Data Rate (HDR, see separate program summary) Antenna, which provides an SHF capability for the Navy's attack submarines. Key services available via SHF SATCOM are: Defense Information Systems Network (DISN), Global Command and Control System (GCCS and GCCS-M), broadcast record message traffic, Tomahawk Mission Planning packages and updates, imagery support, DSN telephone/ISDN access, Joint Deployable Intelligence Support Service (JDISS), Joint Worldwide Intelligence Communications System (JWICS), Unclassified-but-Sensitive Internet Protocol Router Network (NIPRNET), Secret Internet Protocol Router Network (SIPRNET), and Video Information Exchange System (VIXS)/Video Teleconferencing (VTC).

Status

SHF SATCOM capability is provided to Navy surface ships by several WSC-6 variants according to the requirements of those platforms. Surveillance Towed Array Sensor (SURTASS) platforms are configured with the WSC-6(V)1. Four aircraft carriers have the WSC-6 (V)4 variant. Numbered fleet commander flagships (AGF/LCC), the other aircraft carriers, and flag-capable amphibious ships (LHA/LHD) are configured with the WSC-6(V)5. This variant provides a dual-termination capability, enabling the ships to establish and simultaneously maintain their C4I links with Naval Computer and Telecommunications Area Master Stations (NCTAMS) and additional links with an Army, Marine Corps, or Air Force Ground Mobile Force (GMF) SHF terminal ashore in the AOR. The WSC-6(V)7 is a single-termination variant being fielded on Aegis cruisers and amphibious ship (LPD and LSD) classes. The WSC-6(V)9 is a single-termination, dual (C/X) band terminal developed to provide wideband, high data rate capability to guided missile destroyers (DDGs) and amphibious ships (LPDs and LSDs). New-construction *San Antonio* (LPD 17)-class amphibious ships are also planned for an SHF SATCOM terminal variant installation. Remaining WSC-6(V)4 terminals will be replaced with dual channel, dual antenna, WSC-6(V)7s. The WSC-6(V)9 terminal is in the process of being fielded on all DDGs (to be completed in FY 2009). Future terminal plans include the Navy Multi-Band Terminal (NMT). All WSC-6(V) variants will be equipped with the Enhanced Bandwidth Efficient Modem (EBEM) (tactical variant) in the FY 2006 to FY 2008 timeframe.

Developers

Electro-Space; Dallas, Texas
Raytheon; Marlborough, Massachusetts
Various COTS/NDI

Mark XIIIA Mode 5 Identification Friend or Foe (IFF)**Description**

The Mark XXIIIA Mode 5 IFF is a secure, real-time, cooperative blue force combat identification system. Combat identification is a prerequisite in FORCENet, thereby becoming a precondition for each of the other pillars as well. IFF Mode 5 uses technology advances in modulation, coding and cryptographic techniques to provide reliability, security, and performance improvements over Mode 4, which National Security Agency decertified in 2003. It is implemented through evolutionary upgrades to Mark XIIIA interrogators, transponders, and processors. Mode 5 can be fielded on all DoD platforms, whether Link-capable or not. It is NATO and JROC-approved and is compatible with all U.S. and international civil IFF requirements.

Status

The Navy's ACAT II POR is based on the improved Mark XII Cooperative IFF Operational Requirements Document, dated 27 April 2001. It will be installed on over 3,000 ships and Navy and Marine Corps aircraft. The program does not include fielding of the shipboard control and display unit, F/A-18 platform integration, or Mode S shipborne interrogation capability. Milestone C is scheduled for third quarter FY 2006. IOC is first quarter FY 2009; FOC is 2015. Navy is the lead service for Mode 5 cryptographic modernization and Mode 5 synchronization across the services. Army and Air Force plans rest on Navy plans and all services' plans have IOC in 2007 and FOC in 2015.

Developers

BAE Systems; Greenlawn, New York
General Dynamics Decision Systems; Scottsdale, Arizona

Multi-functional Information Distribution System (MIDS-LVT)**Description**

MIDS-LVT is a multi-national cooperative development program to design, develop, and produce a tactical information distribution system equivalent to Joint Tactical Information Distribution System (JTIDS), but in a low-volume, lightweight, compact terminal designed for fighter aircraft with applications in helicopters, ships, and ground sites. Navy procurement, limited by available resources, is targeted for F/A-18 Hornet aircraft as the lead aviation platform and surface craft. MIDS-LVT is a pre-programmed product improvement and replacement for JTIDS, providing identical capabilities at reduced size, weight, and cost. As a P3I of the JTIDS Class 2 Terminal, the MIDS-LVT will employ the Link-16 (TA-DIL-J) message standard of Navy/NATO publications. MIDS-LVT



is fully interoperable with JTIDS and was designed in response to current aircraft, surface ship, submarine, and ground host volume and weight constraints. The solution variants, MIDS-LVT (1), MIDS-LVT (2), and MIDS-LVT (3), support Navy, Marine Corps, and Air Force aircraft; Navy ships; Army Patriot, THAAD, MEADS and ground-based defense systems; Air Force and Marine Corps ground-based command and control platforms; and potentially other tactical aircraft and ground-based systems. MIDS-LVT is an international project partnering the U.S. with Germany, Spain, Italy, and France. The MIDS-LVT (1) variant will be used in the MIDS on ship program providing the Link 16 capability to new Construction Surface Combatants.

Status

The program entered the engineering, management and development (EMD) phase in December 1993. MIDS was approved for LRIP in FY 2000. It reached IOC on the F/A-18C/D Hornet in FY 2003. MIDS is being procured for F/A-18 C/D/E/F/G aircraft. The U.S. is the MIDS-LVT program leader with Germany, Spain, Italy, and France entering into a European partnership, called EUROMIDS. The Air Force F-15 fighter variant, MIDS-LVT (3), is currently in full-rate production and has reached IOC. The Army variant, LVT-2 entered full-rate production in September 2003. The Navy/Air Force variant, LVT-1, passed OPEVAL and was authorized to enter full-rate production on 9 September 2003. MIDS on ship is scheduled for IOC in late FY 2006.

Developers

ViaSat; Carlsbad, California

Data Link Solutions; Cedar Rapids, Iowa

Data Link Solutions; Wayne, New Jersey

An International consortium, MIDSCO, developed MIDS-LVT. EUROMIDS will be the European producer of MIDS terminals

Mobile User Objective System (MUOS)

Description

The MUOS will provide a replacement tactical narrowband satellite communications (SATCOM) capability to the UHF Follow-On (UFO) satellite program. MUOS has been designated a DoD Space Major Defense Acquisition Program (MDAP) and will leverage commercial technology to the greatest degree possible. It will provide tactical narrowband netted, point-to-point, and broadcast services of voice, video, and data worldwide. It will consist of four geo-synchronous satellites plus a spare and provide a four-fold increase in network accesses. The target users are unified commands and joint task force components, DoD and non-DoD agencies, and allied and coalition mobile users who need to communicate while on the move.

Status

Concept exploration studies, analysis of alternatives, the Component Advanced Development (CAD) phase, and Preliminary Design Review have been completed. The Key Decision Point



(KDP) B MUOS Operational Requirements Document (ORD) was approved by the JROC on 2 August 2004. Based on technical and schedule risk, the Under Secretary of the Air Force for Space (Milestone Decision Authority) changed IOC from 2009 to 2010. The Milestone Decision Authority also approved entry into the Risk Reduction and Design Development (RR&DD) phase on 16 September 2004 (KDP B). PEO Space, PMW 146 awarded the RR&DD contract to Lockheed Martin on 24 September 2004. MUOS has now entered the Critical Design Review phase and expect to reach IOC in 2010.

Developers

Lockheed Martin; Sunnyvale, California
Boeing; El Segundo, California
General Dynamics; Scottsdale, Arizona

NATO Improved Link-II**Description**

Link-22 is the next-generation NATO Tactical Data Link also referred to as the NATO Improved Link Eleven (NILE). It is a co-development program with seven NATO countries and is in the latter half of its research and development phase. As an evolutionary new Link design, Link-22 is based on modern, media-independent networking technology that will be applied in the exchange and forwarding of tactical data at extended ranges and between multiple networks over a variety of RF media. A member of the J-series family, Link-22 will complement Link-16 by providing Beyond Line of Sight (BLOS) connectivity among C2 platforms and modern, robust, relay/routing techniques. The Link-22 design includes a growth feature to accommodate the addition of SATCOM media for BLOS J-series data exchange. Link-22 will support interoperability with critical allied/coalition partners that have transitioned from Link-11 to Link-22 but do not possess a Link-16 capability. Implementation of Link-22 will ensure allied/coalition forces maintain the level of situational awareness required to plan and execute coordinated combat operations across the allied/coalition Area of Responsibility. Since Link-22 is an evolutionary Tactical Data Link (TDL), the Next Generation Command and Control Processor (NGC2P) will implement hardware and software changes that will provide a full Link-22 capability with little if any change to host combat systems.

Status

Link-22 will first be introduced in an adjunct processor to Common Data Link Monitoring System (CDLMS) in FY 2006. Full Link-22 functionality will be introduced as part of the Next Generation Command and Control Processor (NGC2P) in FY 2007.

Developers

Northrop Grumman; San Diego, California
ViaSat; San Diego, California
SPAWARSYSCEN; San Diego, California



NAVSTAR Global Positioning System (GPS)

Description

The NAVSTAR GPS is a space-based, satellite, radio navigation system that provides users with worldwide, all-weather, three-dimensional positioning, velocity, and precise time data. Navy requirements include the integration of GPS in more than 300 surface ships and submarines and 5,100 aircraft, integration of shipboard combat systems with the Navigation Sensor System Interface (NAVSSI), and anti-jam protection for high-priority combat platforms through the Navigation Warfare (NavWar) program. GPS plays an important role not only in navigation, but also in providing precise time to precision strike weapons, naval surface fire support systems and ship C4I systems.

NAVSSI is a system that collects, processes, and disseminates position, velocity, and timing data to weapons systems, and C4I and combat support systems onboard surface warships. It hosts embedded, next-generation, card-based GPS receivers. NavWar will provide anti-jam antennas for the protection of select naval platforms in order to ensure a continued high level of mission effectiveness in a GPS-jamming environment. NavWar also incorporates the capabilities of GPS modernization into Navy user equipment to receive the future military satellite signals.

Status

100 percent of the ships and submarines have completed their initial GPS installations and aircraft integrations are continuing. The FY 2006 budget supports equipping the remaining planned aircraft with initial GPS capability, providing surface combatants with modernized NAVSSIs through the FYDP, and ensuring that the GPS signal is protected on naval platforms.

Developers

Rockwell-Collins; Cedar Rapids, Iowa

Raytheon; Los Angeles, California

Trimble Navigation; Sunnyvale, California

Litton Data Systems; San Diego, California

Navy EHF / AEHF Navy Extremely High Frequency Satellite Communications

Description

The Navy Multi-band Terminal (NMT) is the future satellite communications (SATCOM) terminal that will provide protected and wideband SATCOM services for Navy ships, submarines, and shore stations. The NMT replaces the AN/USC-38 / Follow-on Terminal (FOT) series from the Navy EHF Satellite Program (NESP), a family of anti-jam, low-probability-of-intercept, and low probability of detection EHF SATCOM terminals, which provide a variety of protected command-and-control and communications applications (i.e., secure voice, imagery, data, and fleet broadcast systems). The NMT also replaces the WSC-6 terminal

series, which provides key wideband SATCOM services available via SHF, including: Defense Information Systems Network, Global Command and Control System, broadcast record message traffic, Tomahawk Mission Planning, imagery support, DSN telephone/ISDN access, Joint Deployable Intelligence Support Service, Joint Worldwide Intelligence Communications System, Unclassified-but-Sensitive Internet Protocol Router Network, Secret Internet Protocol Router Network, and Video Information Exchange System/Video Teleconferencing. The NMT will also enable the Global Broadcast Service (GBS) suite to access the GBS broadcast.

The NMT will be interoperable with Army and Air Force terminals.

The NMT will allow access to: protected EHF SATCOM services available on Milstar; EHF payloads onboard Ultra High Frequency Follow-On satellites, and three planned (one operational in 2003) Polar EHF payloads, which fly onboard classified host satellites. NMT will also allow wideband (X band) access to the Defense Satellite Communications System (DSCS) satellites and to the follow on Wideband Gapfiller Satellites (WGS). Additionally, NMT will expand protected SATCOM services to include those provided by the Advanced EHF (AEHF) satellites,

The terminal will operate in the EHF uplink and SHF downlink radio frequency spectra (X, Ka, Ku, and Q bands). The terminal will support the current EHF waveforms: EHF Low Data Rate (LDR) - 75 bps to 2400 bps, and EHF Medium Data Rate (MDR) - 4.8 Kbps to 1.544 Mbps. The NMT will also support the AEHF waveform, which will extend data-rates up to 8.129 Mbps (XDR).

Status

The NMT received Milestone B approval in October 2003. FY 2006 focuses on NMT prototype development by two competing contractors, leading to the award of an engineering development model contract in FY 2007. Initial fielding is planned for FY 2012. The FOT version of the AN/USC-38 (V), NMT predecessor continues fielding in FY2006, with a projected FOC in FY2007 for ships and 2009 for submarines.

Developers

NESP and FOT: Raytheon; Marlborough, Massachusetts
NMT developers: Raytheon; Marlborough, Massachusetts
Harris; Melbourne, Florida



Navy Meteorological/Oceanographic Sensors (METOC) Sensors (Space)

Description

The Navy METOC Sensors (Space) program supports Navy interests in meteorological and oceanographic (METOC) space-based remote sensors. These interests include commitments to satellite, sensor, and operational development activities associated with the Defense Meteorology Satellite Program (DMSP) and the National Polar-orbiting Operational Environmental Satellite System (NPOESS). The sensors carried on DMSP and future NPOESS satellites provide global oceanic and atmospheric data of direct operational relevance, including sea surface temperature, wind speed and direction, sea ice conditions, precipitation rates, and storm intensity. The program provides for Navy participation in Navy/Air Force cooperative efforts leading to current and future METOC sensor development, including calibration and validation of instruments and delivery of satellite products to the Fleet.

Status

In October 1997, the program commenced development of Coriolis/Windsat, the world's first space-based sensor that passively measures ocean surface wind speed and direction, launched in December 2002. Development of the Airborne Polarimetric Microwave Imaging Radiometer (APMIR) for calibration and validation (cal/val) of the Air Force Special Sensor Microwave Imager/Sounder (SSMIS) and Coriolis/Windsat, began in early FY 1998. APMIR is in service to support the first SSMIS mission on DMSP-F16, launched in October 2003. APMIR will continue as an ongoing cal/val program for DMSP, Coriolis/Windsat, and NPOESS microwave radiometer sensors. In addition to these projects, discussions are underway with NASA, NOAA, and other agencies to fulfill the long-standing requirement for geostationary environmental imagery of the Indian Ocean.

Developers

Windsat Sensor: Naval Research Laboratory (NRL);

Washington, District of Columbia

Coriolis Spacecraft: Spectrum Astro; Gilbert, Arizona

Navy Marine Corps Intranet (NMCI)

Description

NMCI is a long-term initiative between the DoN and the private sector to deliver a single, integrated department-wide network for Navy and Marine Corps shore commands. The NMCI contract, awarded in October 2000, is a seven-year contract with a three-year option to procure service-wide IT services and provides the shore network infrastructure within the CONUS for the Navy's FORCENet architecture. NMCI provides comprehensive end-to-end information services for data, video, and voice communications for DoN military and civilian personnel and connects to the GIG, making the DoN workforce more efficient, more productive, and better able to support the critical warfighting missions of the DoD.

Status

NMCI is operational and continues to provide commercial IT services for nearly half a million DoN employees and one Combatant Commander. To date, the DoN has ordered 335,000 of the expected 345,000 FY 2005 seats and deployed 275,000 end-state seats. Implementing NMCI has enabled the DoN to increase the security posture of its networks and has provided unprecedented visibility into IT costs. Upon completion of the Operational Evaluation (OPEVAL) in September 2003 and the delivery of the final report in April 2004, NMCI successfully completed all OSD directed milestone decision points leading to approval of full program implementation.

Developers

The NMCI contract was awarded to a team of contractors led by Electronic Data Systems (EDS). The remainder of the contractor team comprises MCI (communications circuits), Microsoft (operating systems and desktop software) Dell (desktop hardware and servers), WAMNET (network architecture), Cisco (switching and network devices), Raytheon (information assurance).

Naval Tactical Command Support System (NTCSS)

Description

The NTCSS is the Navy combat logistics support information system that enables unit commanders and their chains of command to manage and assess the readiness of unit and battle group material and personnel. NTCSS is a cornerstone of the Sea Basing aspect of the four *Sea Power 21* pillars. Sea Base includes joint command and control, fire support, and logistics. This program provides combat support systems to surface, sub-surface, and aviation operational commanders. Its support functions include organizational maintenance, supply, and personnel administration through every level of operations, in peacetime and during war. NTCSS also supports network-centric warfare by integrating logistics information for the warfighter. It replaces, merges, and optimizes legacy Shipboard Non-tactical ADP Program (SNAP),





Naval Aviation Logistics Command Management Information System (NALCOMIS), Maintenance Resource Management System (MRMS), and several smaller logistics applications into an integrated logistics system. NTCSS, through migration with the Defense Information Infrastructure Common Operating Environment (DII COE) technical architecture, will be used to complete the tactical readiness picture for operational commanders by supporting the Global Command Support System (GCSS) and the Common Operational Picture. This program employs an evolutionary strategy merging the technical and functional capabilities of the system components. The first stage of the strategy included hardware modernization and network installations using open system architectures and operating environments at all sites. This hardware environment is common with tactical programs and compliant with DII standards. The second stage involves technical optimization of the functional applications using modern software development tools, relational databases, and a common operating environment. Follow-on stages of the program involve development and implementation of Business Process Improvements (BPIs) under the sponsorship of functional and fleet managers and the movement of logistics applications into a web-based environment. BPI development, when integrated with Business Process Re-engineering and Enterprise Resource Planning efforts, will support increased efficiencies from improved operations, reduced manpower, and migration of work from afloat to ashore units. As a result, Navy will be able to reduce total ownership cost across the theater of operations.

Status

The program is currently in phase two: fielding NTCSS-Optimized on ships, submarines, and afloat and ashore aviation intermediate maintenance activities to support the modernization of the logistics operations of operating forces. Once successful Low Rate Initial Production evaluation is achieved, phase three can begin, allowing legacy SNAP III units to transform directly to the web-enabled eNTCSS environment. NTCSS-Optimized platforms will also upgrade to eNTCSS.

Developers

The COTS hardware is being procured through indefinite delivery/indefinite quantity government contracts. Engineering, development, integration, installation, training, and life cycle support will be accomplished through Navy and Defense Department activities, with additional support from industry partners.

Tactical Switching

Description

Tactical Switching and its implementation, known as the Shore Infrastructure Master Plan (SIMP), is focused on the automation and conversion of the existing circa-1970 Serial Switched point-to-

point shore infrastructure connecting three Navy Computer and Telecommunications Area Master Stations (NCTAMS), ten Navy Computer and Telecommunications Stations (NCTS), 27 NCTS Detachments, 23+ Network Operation Centers (NOC), and 5,270 personnel. The plan currently underway will invoke multiple spirals to implement the technology and automation and infrastructure necessary to evolve the shore infrastructure to two Regional Network Operations and Security Centers (Atlantic/Pacific) and one Global Network Operations and Security Center providing interoperable joint global network-centric services and connectivity to tactical and strategic naval assets. This architecture will be managed, monitored, operated, maintained and defended with fewer than 50 percent of today's manpower resources and eliminate more than 70 percent of today's fixed sites further reducing infrastructure costs.

Status

During FY 2005, the Tactical Switching program provided High Speed Global Ring (HSGR) connectivity between the five critical regions, which enabled accelerated consolidation of services into the Atlantic and Pacific regions. Significant progress has been made to convert the existing Tactical Video Teleconferencing (VTC) to IP reducing reliance on the serial infrastructure and installation of Element Management Systems that will enable remote management and operations of existing equipments. Enterprise Management and Monitoring systems are currently being evaluated to further consolidate services and personnel as well as provide tactical and strategic visualization of the Navy enterprise to service and Combatant Command/Commander (COCOM) agencies NetOps in support of GIG operations.

Developers

PEO C41 and Space; San Diego, California

Trusted Information Systems (TIS)

Description

TIS provides a complete cross-domain capability for the automatic exchange of critical intelligence and operational information between U.S., Allied, and Coalition forces. TIS includes both the Radiant Mercury (RM) and Joint Cross Domain Exchange (JCDX) systems. Both systems are Director of Intelligence Directive 6/3 Protection Level 4 (PL-4), Multi-level Secure (MLS) certified providing unique cross-domain information sharing capabilities from top secret SCI to GENSER and GENSER to unclassified.

RM is certified and accredited by both the SCI (top secret and below interoperability) and GENSER (secret and below interoperability) communities. RM provides a fully-automated, bi-directional, multiple input/output channel capability, that can be serial or network connected, to sanitize, transliterate, downgrade, and guard classified, formatted information to users at





lower classification levels. RM also processes unformatted message types and imagery utilizing reliable human review (semi-automated). RM is deployed to more than 160 sites worldwide including all Combatant Commands, Navy large-deck aircraft carrier and amphibious warships, Shared Early Warning, Blue Force Tracking and numerous Air Force and Army sites as well as national agencies.

JCDX is DoD's only comprehensive multi-level C4I system certified to connect to multiple networks at multiple security levels. JCDX serves as the backbone automated information system providing accredited manual and automatic exchange of multilevel Common Operational Picture (COP), e-mail, imagery, and event-by-event data dissemination. The system provides MLS C4I and cross-domain services to U.S. Joint Intelligence Centers and is the national level defense intelligence system for the United Kingdom and Australia, and is the service-level operational intelligence system for the Japanese Maritime Defense Forces as well as the Republic of Korea.

Status

Current developments are focused on migrating TIS certified MLS capabilities into a Services Oriented Architecture and integrating with additional afloat, joint, and coalition-network architectures. As the Executive Agent of the multi-service RM program, the Navy will continue to oversee RM and RMIG support to more than 160 locations worldwide. JCDX/OED installations are planned at Maritime Surveillance System (MSS) sites in FY 2006 to support U.S. Secret/Allied/Special Category (SPECAT) interoperability.

Developers

Maxim Systems; San Diego, California
 Northrop Grumman Mission Systems; Arlington, Virginia
 Lockheed Martin; Denver, Colorado
 Booz Allen Hamilton; Chantilly, Virginia

UFO UHF Satellite Communications Follow-On

Description

The Ultra High Frequency (UHF) Follow-On (UFO) satellite program comprises eight satellites and one on-orbit spare, and it replaced the Fleet Satellite (FLTSAT), Gapfiller, and Leased Satellite (LEASAT) UHF constellations. UHF SATCOM services, provided by UFO, include worldwide, narrowband, unprotected netted, point-to-point, and broadcast service of voice, video, and data using 5 and 25 Khz UHF channels. UFO also provides a protected Fleet Broadcast using an Extremely High Frequency (EHF) uplink and UHF downlink to provide an anti-jam capability on the uplink. UFOs 4-11 carry an EHF payload that provides anti-jam capability on the uplink and downlink. Protected services include netted, point-to-point, and broadcast service of voice and data. The EHF payload also provides an anti-jam telemetry tracking and control uplink capability. UFOs 8-10 also include a



Global Broadcast Service (GBS) payload. GBS uses direct broadcast technology at an extremely high data rate to many users via very small terminals.

Status

Eleven satellites have been launched and nine are operational. The launch of UFO 1 was a failure, and UFO 10 was launched in November 1999 as a replacement. A Gapfiller (UFO-11) was launched in December 2003 to maintain constellation availability at minimum acceptable 70 percent through 2010 to coincide with the launch of MUOS. UFO 3 failed in orbit in June 2005. This moved the UFO 70 percent availability from 2010 to 2009. Mobile User Objective System (MUOS) is still on track to begin replacing UFO in 2010 leaving a potential 12 month gap.

Developers

Boeing Satellite Systems; Los Angeles, California
SPAWAR Systems Command; San Diego, California

Undersea Warfare-Decision Support System (USW-DSS)

Description

The USW-DSS program provides an integrated, near-real time, network-centric Undersea Warfare (USW) Command and Control (C2) capability across multiple platforms, even with low bandwidth or intermittent inter-platform communications. USW-DSS leverages existing communication links, networks, contact pictures, and sensor data from air, surface, submarine, theater, and surveillance platforms and integrates them to produce a common USW near-real time decision support tool. It provides a critical capability, not only for the Sea Combat Commander (SCC), but also for the Theater USW Commander (TUSWC), Antisubmarine Warfare Commander (ASWC), and Mine Warfare Commander (MIWC), for an integrated capability to plan, conduct, and coordinate USW operations with multiple ASW and MIW platforms. USW-DSS will provide common and improved visualization, integrated USW platform sensor data sharing, reduced data entry, improved performance prediction, reduced redundancy across USW Tactical Decision Aids (TDAs), and data fusion, which is currently not available to the SCC. USW-DSS will provide greater understanding of the undersea battle space by allowing the entire force (CSG/ ESG, theater, or other) to have a common, thorough understanding of the battle space with characterized uncertainties. USW-DSS will also serve as the single consolidated repository for all USW TDAs across all USW platforms, thus saving the cost of maintaining numerous individual applications, TDAs, and stove-piped systems.

USW-DSS uses the spiral development process. A peer review group will select current and developmental technologies to be incorporated into a build-test-build process to develop a network-centric USW capability. USW-DSS Builds 1-4 (FY 2006-FY 2011) will align with Common Operating Environment (COE)/Global





Command and Control System-Maritime Applications (GCCS-M)/Net-Centric Enterprise Services (NCES), FORCENet, Joint Command and Control (JC2), as a maritime application, and Program Executive Office for Integrated Warfare Systems (PEO IWS) open architecture. Current plans are for USW-DSS to transition into a GCCS-M application with a subsequent migration as a maritime application, in JC2.

Status

USW-DSS currently uses a Top Level Requirements (TLR) document signed by the Warfare Sponsor, Task Force ASW (formerly N74) on 2 October 2003, and was documented based on high-level guidance from a Net-Centric USW (NCUSW) Mission Needs Statement (MNS). The TLR is being updated to incorporate new requirements resulting from the C2 in ASW Study. In FY 2006, USW-DSS will be installed on two carrier strike groups as well as theater USW assets. Candidate platforms include CVNs, DDGs, CGs, MCM vessels, submarines, P-3s, SURTASS vessels, and supporting shore nodes (CTE, TSC, Training, and NOPF).

Developers

Multiple Navy and university labs and industry participants will perform the various developer and manufacturer roles. The software integration role for each Build (1-4) will be competed amongst industry and labs.

Web Enabling (WEN)

Description

WEN efforts were started by the CNO in April 2001 as a transition effort. One of the key requirements in any network-centric warfare architecture is the ability to exchange data transparently. Throughout recent years there have been many DoD and DoN attempts to meet this requirement, some more successful than others. WEN will help to make the warfighter more productive with inclusion of tools such as sharing of disparate data base information between systems and the ability to rapidly manipulate and customize the presentation of such data to the needs at hand.

Implementation of the WEN is part of the transformation process that will rationalize many of the inconsistencies in the way Navy information systems currently work together. To achieve this transformation, WEN will leverage and influence the planned capabilities and resources of IT programs within both the shipboard (ISNS), Base Level Information Infrastructure (BLII) and Navy and Marine Corps Intranet (NMCI) shore environments. At the enterprise level, the NMCI ashore WEN portal and the ISNS afloat WEN portal will interface to share user information, data, services, and content. The BLII overseas and the Marine Corps Enterprise Network (MCEN) will also leverage these capabilities as they are implemented. Enabling technologies and processes to be employed include PKI enabled Single Sign-On, a Naval Global Directory Service providing a single flat name-space for users;

synchronization of user directories, a synchronized relationship between portal instances; and establishment of a common data replication process between NMCI, BLII, MCEN, and ISNS.

Status

IOC was provided in FY 2004. Classified and unclassified portal pilots have been implemented ashore and afloat. These pilots are consistent with the guidance specified for the enterprise Web architecture, and will be rolled into the NMCP infrastructure concurrent with the IOC of the NMCP. The afloat and ashore portals will be fully connected for redundancy, replication, and ease of access. Further implementation is subject to funding. Incorporation to the architectures is planned for FY 2006.

Developers

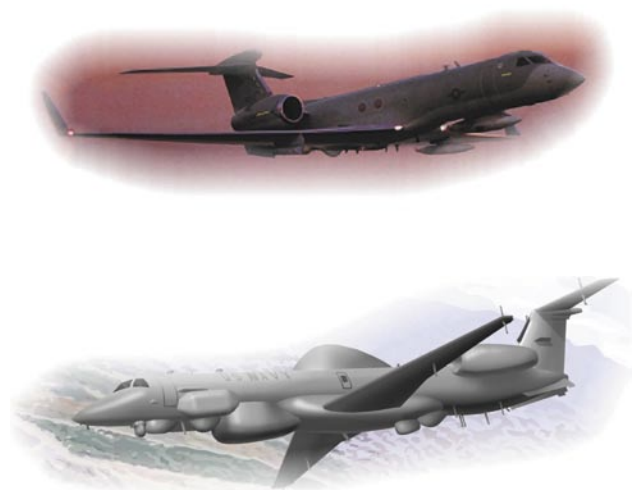
SPAWAR has the lead in architecting, implementing, and testing the infrastructure and services that comprise the Navy Enterprise Portal-Afloat. General Dynamics has the contract for upgrade of Baseline II that will include Web Enabling capabilities. ISF/EDS is the contract company for NMCI.

AIRBORNE SYSTEMS

Aerial Common Sensor (ACS)

Description

The transformation of Naval Airborne Information Warfare is driven by the need for a capability supporting a variety of ISR, target acquisition and Information Warfare/Operations (IW/IO) missions during peacetime and through all levels of war. ACS will replace the Information Warfare capability of aging EP-3E aircraft. ACS will align with all *Sea Power 21* pillars, but will primarily support FORCENet by providing fused Multi-INT derived time critical, actionable information to the warfighter. Accomplishing this requires a combination of sensors, including Signals Intelligence (Communication Intelligence/Electronic Intelligence), Imagery Intelligence (IMINT (Electro-Optical (EO)/Infrared (IR)), Synthetic Aperture Radar (SAR), Multi-Spectral and Hyper-Spectral Imaging (MS/HSI)), Ground/Maritime Moving Target Indicator (G/M MTI), and Measurement and Signatures Intelligence (MASINT) systems. ACS will be capable of multiple operational configurations, using a combination of onboard and off-board collection, processing and reporting operations. ACS will be a primary ISR node within FORCENet and will use joint standards and architectures to achieve interoperability across the Global Information Grid. This transformational process will allow ACS to make optimum use of external processing while maintaining exploitation, fusion, and dissemination capabilities within the Battlespace. The aforementioned capabilities will allow for better use of Low density/High demand (LD/HD) personnel assets, deploy with a smaller footprint, and garner a significant manpower reduction. Supporting the Navy objective to provide im-



mediately employable forward-deployed naval forces, ACS will deploy anywhere in the world within 72 hours. Operating initially without support and with a minimum footprint, ACS will be capable of conducting operations en route and immediately upon arrival in theater.

Status

Initial Army ACS contract (addressing JROC approved Army and Navy ISR requirements) was awarded to Lockheed Martin in July 2004 and terminated in January 2006. ACS program development will proceed following 2006 Joint service study of ISR requirements. The EP-3E (see separate program summary) will be modernized to a common configuration and sustained until Navy ACS reaches IOC.

Developers

To be determined.

E-2 Hawkeye Airborne Early Warning Aircraft Upgrade

Description

The E-2 Hawkeye is the Navy's airborne surveillance and command-and-control platform, providing battle management and support of decisive power projection at sea and over land in a joint operational architecture. In addition to current capabilities, the E-2 has an extensive upgrade and development program to prepare it as a critical element in an overall joint theater air and missile defense program.

Two upgrades will ensure that Hawkeyes keep pace with changing tactical environments: the E-2C Hawkeye 2000 and the E-2D Advanced Hawkeye (AHE), including the Radar Modernization Program. The E-2C Hawkeye 2000, the most advanced Hawkeye variant in production, features Mission Computer Upgrade (MCU), Cooperative Engagement Capability (CEC), Improved Electronic Support Measures (ESM), Joint Tactical Information Distribution System (JTIDS), Global Positioning System (GPS), and data and voice satellite communications. The MCU greatly improves weapons systems processing power enabling the incorporation of CEC. In turn, CEC-equipped Hawkeyes will significantly extend the engagement capability of surface forces. It is the key to early cueing of the Aegis Weapon System, dramatically extending the lethal range of the Standard Missile (SM-2). The Advanced Hawkeye's Radar Modernization Program is developing a radar that will bring over-the-horizon, overland detection, and tracking to the strike group. This, coupled with CEC, will fully integrate Advanced Hawkeye into the Joint Integrated Air and Missile Defense (JIAMD) role. This advanced detection and tracking capability, in conjunction with Aegis and the upgraded Standard Missiles, will allow strike groups to deploy an organic, theater-wide air and cruise missile Sea Shield umbrella to protect high-priority areas and U.S. and coalition forces. The E-2's systems are fully interoperable with the Airborne Warning and Control System (AWACS) and ground-



based systems for a seamless joint architecture. The Hawkeye will continue as the airborne “eyes and ears” of the fleet as it applies its capabilities in the integrated joint, overland, theater-wide air and cruise missile-defense environment. Many of the technological improvements being incorporated in the Hawkeye represent leading-edge improvements in U.S. forces, not just in the Navy’s theater air and missile defense programs.

Status

The Navy intends to procure 26 Hawkeye 2000s through 2009. CEC passed Technical and Operational Evaluations and is now in the Fleet. Two E-2D Advanced Hawkeye System Development and Demonstration aircraft had their keels laid in April and July 2005 respectively. First flight is scheduled for fourth quarter FY 2007, with IOC in FY 2011.

Developers

Northrop Grumman; Bethpage, New York
Northrop Grumman; St. Augustine, Florida

EP-3E Modification and Sustainment

Description

The EP-3E is the Navy’s only airborne Information Warfare (IW) and tactical Signals Intelligence (SIGINT) platform supporting naval and joint commanders. EP-3Es provide long-range, high-endurance support to aircraft carrier strike groups and expeditionary strike groups in addition to performing independent maritime operations. The current force consists of two active squadrons. The original EP-3E Joint Airborne SIGINT Architecture Modification (JMOD) program has been restructured to bring all EP-3E platforms into a common configuration and will be sustained until Aerial Common Sensor (ACS), a joint development program with the Army, can be fielded with an FOC of approximately 2017. EP-3E modernization/sustainment strategy includes three elements: P-3 to EP-3E conversions; EP-3E JMOD common configuration; and airframe inspections/repairs.

P-3 to EP-3E conversions: The P-3 to EP-3 conversion program converts five P-3C Orion aircraft to EP-3E platforms. Four will be completed in FY 2005 and one in FY 2006.

EP-3E JMOD common configuration: The EP-3E JMOD Program has been restructured to align all EP-3E mission systems to a common baseline that meets the challenge of rapidly emerging threat technology, identified as the JMOD Common Configuration (JCC). JCC will address mission system obsolescence and incorporate “quick reaction” capabilities specifically developed for OEF/OIF. JCC will also accelerate capabilities, developed under the JMOD program, to the fleet five years ahead of schedule. The JCC includes expanded ELINT exploitation capability and COMINT signals coverage, new multi-platform COMINT Direction-Finding Capability, and advanced Special Signals-Collection capability.



Inspections/repairs: EP-3Es will be sustained through a series of Special Structural Inspections (SSIs) and Special Structural Inspection-Kits (SSI-Ks). SSIs will be completed on all aircraft. SSI-Ks will be completed on select aircraft meeting criteria as required and will include preemptive replacement of fatigue critical structures.

Status

The EP-3E JCC ORD was approved on 10 June 2005. The JCC Development/Production Contract was awarded on 29 June 2005. The EP-3E will be modernized to a common configuration and sustained until Navy ACS (see separate program summary) reaches IOC.

Developers

L3 Communications; Waco, Texas
 Northrop Grumman; Baltimore, Maryland
 Titan; Vienna, Virginia
 Aeronix; Melbourne, Florida
 General Dynamics; San Jose, California
 Allied Signal; Sunnyvale, California
 TRW; Sunnyvale, California
 EDO Corporation; San Jose, California
 Lockheed Martin; Fort Worth, Texas and Denver, Colorado
 Naval Surface Warfare Center (NSWC); Crane, Indiana
 NSWC; Dahlgren, Virginia
 Naval Aviation Depot; Jacksonville, Florida

Naval Mission Planning Systems (NAVMPS)

Description

NavMPS is a suite of applications that allow aircrew to perform tactical mission planning at the secret level for a wide variety of aviation platforms and air launched weapons. NavMPS consists of the Joint Mission Planning System (JMPS), Tactical Automated Mission Planning System (TAMPS), and the Navy Portable Flight Planning Software (N-PFPS). The Joint Mission Planning System (JMPS) is the next generation mission planning system. JMPS is a collaborative development effort by the Navy, Air Force, Army, and SOCOM that will bring all “stovepipe” legacy DOD mission-planning systems under one program with a common framework. JMPS is a single source for preflight planning including aircraft performance data, fuel planning, route planning, threat assessment, precision and conventional weapons planning, and provides the interface to load mission data onto the aircraft. TAMPS is the legacy Navy/Marine Corps standard unit-level aircraft mission planning system for tactical aircraft. N-PFPS is the Navy/Marine Corps standard flight-planning system that covers non-TAMPS aircraft, primarily the helicopter community.



Status

JMPS began replacing TAMPS in FY 2005. The final version of TAMPS will be removed from the fleet in FY 2006. JMPS will replace PFPS in FY 2008. JMPS Core Architecture commenced development in 1998 and reached IOC in FY 2004. Expeditionary warfare planning-capability is scheduled for incorporation into the JMPS architecture during FY 2006.

Developers

BAE Systems; Camarillo, California
USAF 46TS/TYBRIN; Fort Walton, Florida
Northrop Grumman; San Pedro, California

SUBMARINE SYSTEM

Common Submarine Radio Room (CSRR)**Description**

The CSRR modernizes the radio rooms on *Seawolf* (SSN 21), *Ohio* (SSBN 726, SSGN 726), and *Los Angeles* (SSN 688)-class submarines based on the Exterior Communications System (ECS) architecture in development for *Virginia* (SSN 774)-class submarines. The system includes up to two High Data Rate (HDR) and/or up to two OE-538 Multi-function Masts (total of two masts per ship) for enhanced wideband connectivity. A common approach to submarine radio room modernization provides the submarine force with the added benefit of common training, common logistics, and common technical insertion.

Status

There are currently seven submarines, spanning three classes, installed with the CSRR design. All class submarines are to be back-fitted by FY 2014.

Developers

Lockheed Martin; Eagan, Minnesota
Naval Underwater Warfare Center; Newport Rhode, Island
Space and Naval Warfare Systems Center; San Diego, California





Submarine High Data-Rate Antenna (HDR)

Description

The submarine HDR antenna program is a top-priority submarine C4I initiative and is the Navy's first multi-band dish antenna. The HDR antenna provides the submarine force with worldwide high data-rate satellite communications capability. It enables the submarine to access the secure, survivable Joint MILSTAR Satellite Program in the Extremely High Frequency (EHF) band. It also provides the capability to receive time critical tactical information from the Global Broadcast Service (GBS). Additionally, the HDR antenna will provide access to the Defense Satellite Communications System (DSCS) in the Super High Frequency (SHF) frequency band.

Status

The HDR Antenna is currently installed on fast attack submarines, with all submarines being outfitted by FY 2009. SHF FOT&E is scheduled for FY 2007 with the implementation of SHF FOT.

Developers

Raytheon; Marlboro, Massachusetts

Submarine Local Area Network (SubLAN)

Description

SubLAN provides separate secret, top secret, SCI, and unclassified LANs with full network services and connectivity. It integrates non-tactical subsystems and applications, including Task Force Web's Navy Enterprise Portal and back-fit versions of *Virginia* (SSN 774)-class Web-enabled "paperless ship" applications. It accommodates hardware/software upgrade and technology insertion for the life of the ship.

SubLAN provides end-to-end connectivity for all tactical and non-tactical subsystems, enabling battle force/JTF interoperability and enables ship-wide access to the common operating picture, JWICS/SIPRNET/NIPRNET e-mail and Web browsing, battle force chat, and other collaborative tools.

Status

SubLAN 1 installations commenced in FY 2004 and will complete in FY 2011. SubLAN 2 installations will commence in FY 2009 and are planned to complete in FY 2014.

Developers

Naval Underwater Warfare Center; Newport, Rhode Island
Space and Naval Warfare Systems Center; San Diego, California
SAIC; Sterling, Virginia

SURFACE AND EXPEDITIONARY SYSTEMS

Advanced Combat Direction System (ACDS)

Description

The ACDS is a centralized, automated command-and-control system. An upgrade from the Naval Tactical Data System (NTDS) for aircraft carriers and large-deck amphibious ships, it provides the capability to identify and classify targets, prioritize and conduct engagements, and exchange targeting information and engagement orders within the battle group and among different service components in the joint theater of operations. ACDS is a core Sea Shield component of non-Aegis/non-SSDS combat systems.

Status

ACDS Block 0 is deployed on six aircraft carriers, five *Wasp* (LHD 1)-class amphibious assault ships, and five *Tarawa* (LHA-1)-class amphibious assault ships. ACDS Block 1 is installed in USS *John F. Kennedy* (CV 67), USS *Nimitz* (CVN 68), USS *Wasp*, and USS *Iwo Jima* (LHD 7). ACDS Block 1 failed OPEVAL and is slated for replacement on *Eisenhower*, *Nimitz*, and *Iwo Jima* by 2007 with the Ship Self-Defense System (SSDS, see separate program summary).

Developers

Raytheon; San Diego, California
Raytheon Space and Naval Warfare Systems Center;
San Diego, California
Integrated Combat Systems Test Facility (ICSTF) and Naval
Surface Warfare Center Port Hueneme Division (NSWC/PHD);
Dam Neck, Virginia

Communications Data Link System (CDLS)

Description

The USQ-167 CDLS is a shipboard system that supports Navy and joint airborne sensor programs that require data communications with shipboard processors. Part the Common Data Link (CDL) family of communication systems. CDLS receives data from remote sensors and transmits data to airborne platforms via the CDL waveform at high data rate.

Status

Communications Data Link System (CDLS) is in production and is installing on CVNs, LHDs, and LHAs.

Developers

CUBIC Corporation; San Diego, California



Cooperative Engagement Capability (CEC)

Description

The Navy's CEC has demonstrated significantly improved battle force air defense capabilities by integrating the sensor data of each cooperating ship and aircraft into a single, real-time, fire-control-quality, composite track picture. CEC also interfaces the weapons capabilities of each CEC-equipped ship in the battle group to support an integrated engagement capability. By simultaneously distributing sensor data on airborne threats to each ship within a battle group, CEC extends the range at which a ship can engage hostile missiles to well beyond the radar horizon, significantly improving area, local, and self-defense capabilities. Operating under the direction of a designated commander, CEC will enable a battle group or joint task force to act as a single, geographically dispersed combat system. CEC provides the fleet with greater defense-in-depth and the mutual support required to confront the evolving threat of anti-ship cruise missiles and theater ballistic missiles.

Status

IOC for the shipboard CEC system, USG-2, was declared in FY 1996. TECHEVAL and OPEVAL were successfully completed in 1998-2001 following extensive development and testing of shipboard combat systems with which CEC interfaces. The report of the Commander, Operational Test and Evaluation Force is complete and shipboard CEC was determined to be ready for fleet use. In April 2002, the Defense Acquisition Board (DAB) approved full-rate production for the USG-2 shipboard equipment sets and LRIP for the USG-3 airborne equipment sets. In September 2003, USD (AT&L) approved FY 2004/FY 2005 follow on LRIP for the USG-3.

By the end of 2005, CEC systems will have been delivered for installation or installed on 34 ships (Aegis CGs and DDGs, carriers, and amphibs) and five E-2C Hawkeye 2000 air squadrons. The USG-3 E-2C Hawkeye 2000 FOT&E-1 was completed in November 2002 and was evaluated as potentially ready for fleet use. FOT&E-2 was conducted in FY 2004 and the USG-3 airborne CEC system was declared "operationally effective," but required further evaluation. IOC for the airborne system was declared in May 2005. Full Operational Capability for the shipboard and airborne systems was declared in May 2005. Interim suitability deficiency resolutions will be in place mid-2005, final resolutions by the end of 2005. FOT&E-3 and FOT&E-4, CEC Software Baseline 2.1 for CVN 69 and LPD 17, are scheduled for FY 2006. CEC is a spiral development program. The revised CEC acquisition strategy was approved in August 2004. This will help achieve DoD system improvements including overall reduced system cost, size, and weight, less power and cooling, and open network architecture initiatives including SIAP common track management capability and GIG sensor fusion initiatives. The Navy is also coordinating with Joint Staff and OSD to explore potential multi-service avenues for CEC capability implementation that will expand sensor netting track

data availability to meet a variety of warfighter needs across various platforms including ground mobile systems.

Developers

Johns Hopkins University, Applied Physics Laboratory;
Laurel, Maryland
Raytheon; St. Petersburg, Florida

SCI Networks**Description**

SCI Networks (previously known as TACINTEL II/SCI ADNS) is an IP-capable, network-centric, automated, communication system for real-time receipt and transmission of Special Intelligence (SI) and Sensitive Compartmented Information (SCI) data while satisfying established Information Assurance (IA) Computer Security criteria. SCI Networks provides secure and reliable IP communications for Cryptologic, Intelligence, and Information Operations (IO) systems supporting strike group commanders; including Direction Finding (DF) Data Transfer, Record Messaging, E-Mail, Chat, File Transfer and Web Browsing. SCI Networks uses open-architecture standards, and is thus a critical element in the Navy's evolving concept of network-centric warfare. The full capability will include voice, video and data transfer among SCI-capable ships and submarines, with gateways to shore nodes. Under the submarine phase of the program, SCI Networks brings the top secret enclave to submarines in addition to the SCI enclave. SCI Networks is the lead program for implementing the SI/SCI portion of the Joint Maritime Communications Strategy (JMCMS) under the C4I Networks initiative.

Status

Installation of the Shore Network Operations Center Facilities is complete and the Defense in Depth DCID 3/6 security upgrades was completed in FY 2005. Installation of Build 2 ship hardware began in FY 1999 and was completed early in FY 2003. Software Release 2.2 began fielding in second quarter of FY 2003 and reached FOC in FY 2005. A Milestone III full-rate production decision was approved on 4 October 2001. Incremental hardware and software upgrades scheduled through FY 2005 and beyond will provide the following capabilities: Defense in Depth security, Submarine Version (includes the TS Enclave), Packet Prioritization, Direct Ship-to-Ship Network Services, Quality of Service, Interface to Defense Messaging System (DMS), an Interface Afloat to DMS, VoIP and an Airborne EDM version. A Maintenance Modification to address the WINDOWS NT End of Life security issue will be executed between FY 2006 and FY 2009. SCI Networks has been designated as an evolutionary program allowing for continued growth and expansion through future technology insertion. It provides the mechanism for phased implementation of both planned improvements and those that surface through advancing technology. The premise of using COTS, GOTS, NDI and existing systems to meet the requirements for SI communications

will continue to be followed. To realize the FORCEnet architecture, FY 2008 through FY 2012 program funds will procure and incorporate Increment 1 capabilities necessary to implement the emerging DoD/Joint architecture enabling SCI Networks to continue providing rapid, reliable, and secure SI communications to the Fleet well into the future.

Developers

SAIC; Arlington, Virginia

Ship Signal Exploitation Equipment (SSEE) Increment E***Description***

The SSQ-137 SSEE Increment E is a Shipboard Information Warfare Tactical Cryptologic Systems program that provides commanders with threat search and identification information and electronic attack options. SSEE provides deployed forces with an afloat IW sensor. SSEE is a COTS/NDI program that is easily re-configured and therefore able to respond rapidly to tasking. The system design permits the rapid insertion of new and emerging technologies that will integrate capabilities from existing systems and advanced technologies into a single, scalable, spirally developed, interoperable system.

Status

SSEE Increment E is in full-rate production.

Developers

Argon ST; Fairfax, Virginia